

## Economic Prosperity

SOLEC Indicator #7043

### Purpose

To assess the unemployment rates within the Great Lakes basin, and, when used in association with other Societal indicators, to infer the capacity for society in the Great Lakes region to make decisions that will benefit the Great Lakes ecosystem. Unemployment, as a single economic measure, can generally describe an economy's condition. A healthy economy, one characterized by low or falling unemployment rates, translates into increased business and government (tax) revenues as well as overall personal income. During periods of low unemployment, (i.e. economic well-being) public support for environmental initiatives by government agencies and elected officials may also be increased.

### Ecosystem Objective

Human economic prosperity is a goal of all governments and humans are part of the ecosystem. Full employment, or achieving the lowest economically sustainable unemployment level possible, is a goal for all economies. A level of unemployment under 5% is considered full employment.

### State of the Ecosystem

By most measures, the binational Great Lakes regional economy is healthy. However, current low unemployment has strained labor markets which, if sustained, could affect the region's economic future. This situation has been building for a decade. The unemployment rate for the Great Lakes states dipped below the U.S. average in 1991 and remained there during the 1990's. In fact, for the Great Lakes states collectively, unemployment is at a 30 year low. Canadian and Ontario economic recoveries unfolded later in the U.S. but have now nearly caught up.

During the 1980's, demographers and labor analysts predicted tighter labor markets for the 1990's. The reasons cited were a reduction in baby-boom entrants to the work force and leveling off of female work force participation. These factors coupled with a dramatic restructuring of the region's important manufacturing sector and greater cross-border trade has virtually eliminated out-migration of people seeking work and has moved the underemployed into better paying, full-time positions.

Both sides of the border reflect a manufacturing intensity

greater than their national economies. The Great Lakes states represent about 27% of national output in manufacturing whereas Ontario is twice as large. The earlier tough times for manufacturing when global competition roared onto the scene forced regional firms and industry clusters to rationalize unproductive plant and trim workforces. Lean production was adopted with more emphasis on technology and just-in-time inventory systems became standard. The manufacturing sector has many cross-border linkages particularly for the auto industry. About half of the billion dollar-a-day U.S.-Canada trade is tied to the Great Lakes states with Ontario as the most prominent province in this relationship.

### Future Pressures

Low unemployment rates can result in difficulty in worker recruitment, possible job training consequences, increased use of overtime, and wage inflation. A "worker market" may also increase mobility from job-to-job and place-to-place. Other factors may add to job mobility such as job matching information technology and more uniform skill standards. On the other hand, as workers age as they are in the Great Lakes region, job mobility rates usually trend downward.

National and regional economies entail complex interactions among goods and service sectors. These sectors and industry clusters are also subject to overall business cycles. When an industry or related cluster of businesses are relatively concentrated in a region or place, cyclical economic trends may have industry and geographic consequences. For example, in northwest Indiana, with its several integrated steel mills, tens of thousands of steel workers lost their jobs in the 1980's. This industry's restructuring period was partly brought on by overseas competition and a recession. The economic and social fabric of area communities was torn apart and recovery is still underway.

The 1990's have shown that good economic times translate into high levels of consumer spending and home buying. These activities are presumed to increase pressures on the ecosystem through household and business waste generation, increased air pollution particularly from transportation sources and accelerated land use changes. Residential development is the largest category of land use change and its environmental

impacts are widely recognized.

#### Future Activities

Business cycles happen but enlightened monetary policy can delay onset of recessionary periods and dampen them as well. Measures that promote economic diversification should be encouraged and particularly for places where the local economy is not diversified. With respect to workers, unemployment insurance, job training and placement are traditional methods to mitigate effects of unemployment. Land use change can be better managed through coordinated planning within and across municipal jurisdictions. Efforts to revitalize urban areas in conjunction with open space and farmland protection can redirect some growth.

#### Further Work Necessary

The unemployment rate as a measure of economic prosperity should be reevaluated for use in the SOLEC process. Its connection to general economic prosperity is acknowledged but it is not precise enough to account for ecosystem impacts, however indirect they may be. Employment differs from place to place irrespective of hydrologic boundaries and even political jurisdictions. It may hold promise as one of several economic prosperity measures, but may be more useful if linked directly to tax revenue generation and household attitudes regarding environmental protection through government action.

#### Case Study - Ontario

In recent years labour market conditions have improved, resulting in a falling unemployment rate. Around the peak of the last recession (November 1992), 592,600 people were unemployed in Ontario (10.7% of the labour force). However, by 1999 the unemployment rate had dropped to 6.3%, its lowest level since 1990.

These figures represent the official unemployment rates published each month by Statistics Canada. They are based on the number of persons who were without work and both available for work and actively looking for work. The hidden unemployed include discouraged workers who gave up looking for work and who would therefore be counted as not in the labour force.

In addition to the official unemployment rate, Statistics Canada publishes from time to time a set of supplementary measures of unemployment to illustrate additional dimensions of labour market behaviour. For instance, Statistics Canada has published a supplementary unemployment rate for the Province of Ontario since 1997. The supplementary unemployment rate includes the official unemployment rate plus discouraged searchers, plus waiting group (recall, replies, long-term future starts), plus involuntary part-timers (in full-time equivalents). Over the period 1997 to 1999, the average official unemployment rate was 7.3%, for comparison purposes the average supplementary unemployment rate was 10.4%.

A similar comparison can be made based on gender. The average official unemployment rate, for males in the Province of Ontario, over the period 1997 to 1999 was 7.2%, and the average supplementary unemployment rate was 9.4%. In the case of females, the average official unemployment rate and average supplementary unemployment rate, over the same period as above, were 7.4% and 11.4%, respectively. In the case of females, there appears to be a higher number of females in involuntary part-time positions.

The official unemployment rate does not capture the total number of individuals who experienced unemployment at some point of the year. In contrast, a one-year point reference period would capture this number. According to an Autumn 2000 Perspectives article, annual rates in general, tend to be almost double the monthly rates, whether individual- or family-based. For instance, the individual unemployment rate for Canada based on a one-year reference period was 17.3% in 1997. The rate based on a one week reference period (the official unemployment rate), was 9.1%. In 1999, the official unemployment rate for both sexes, in Ontario, was 6.3%, an estimate of the one-year reference number, for the same year, based on a doubling of the official rate would be approximately 12.6%. Therefore, almost 1 in 8 people in the labour force were unemployed at one point in the year.

In Table 1, official unemployment rates, for the period 1987 to 1999, are provided for the Province of Ontario, as well as Census Metropolitan Areas (CMAs) within the Province. A comparison of the CMA versus Provincial unemployment rates

reveals that over the 1987 to 1999 period, the CMAs of Sudbury, Oshawa, St. Catharines-Niagara, Windsor and Thunder Bay have more often had unemployment rates greater than the provincial average. For the most part, the increases in unemployment rates over this period have been a consequence of declines in employment in the manufacturing sector, as well as the resource sector in the case of Sudbury CMA.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>Ontario</b>	<b>6.1</b>	<b>5.1</b>	<b>5.1</b>	<b>6.2</b>	<b>9.5</b>	<b>10.7</b>	<b>10.9</b>	<b>9.6</b>	<b>8.7</b>	<b>9.0</b>	<b>8.4</b>	<b>7.2</b>	<b>6.3</b>
Ottawa-Hull	7.4	5.2	6.1	5.9	7.3	8.6	8.5	8.2	9.6	8.4	8.9	7.1	6.5
Sudbury	11.4	9.8	7.9	8.0	10.1	11.7	10.5	10.4	8.9	9.8	9.1	11.0	9.8
Oshawa	6.3	5.5	4.0	6.5	9.5	11.7	11.5	9.7	8.7	9.7	8.0	7.3	5.9
Toronto	4.5	3.8	4.0	5.2	9.5	11.2	11.4	10.4	8.6	9.1	8.0	7.0	6.1
Hamilton	6.4	5.8	5.0	6.2	9.9	10.5	11.6	8.2	6.4	7.4	6.4	5.2	4.9
St. Catharines-Niagara	9.5	6.3	7.2	7.0	11.2	12.5	14.2	10.7	9.0	9.1	9.9	7.6	6.9
London	7.1	4.7	4.3	5.9	7.8	8.7	8.9	7.7	8.0	8.8	7.7	6.1	6.7
Windsor	9.0	7.7	8.1	8.8	12.4	12.6	11.6	9.0	8.5	8.5	9.1	8.7	6.5
Kitchener	5.8	5.3	4.8	6.4	9.4	9.4	9.0	6.6	7.9	8.3	7.4	6.5	5.7
Thunder Bay	8.4	6.3	5.5	7.7	9.4	10.1	11.5	10.8	8.1	9.1	9.1	9.0	7.8

Source: Statistics Canada. (2000). Labour Force Historical Review 1999. Cat. 71F0004XCB.

A breakdown of employment by sector, in the Province of Ontario, over the period 1987 to 1999, reveals a shift in employment from the goods-producing sector to the services-producing sector. In 1987, 32% of all employed persons in Ontario were employed in the goods-producing sector, versus 68% in the services-producing sector. In that same year, persons employed in the manufacturing sector accounted for 66% of all persons employed in the goods-producing sector.

By 1992, the height of the last recession, those employed in the goods-producing sector accounted for 27.3% of all persons employed in Ontario, a decline of 4.7% or 212,600 jobs from 1987 employment levels. During this same year, the services-producing sector accounted for 72.7% of all employed. A decline in those employed in the manufacturing sector accompanied the decline in the goods-producing sector. In 1992, those employed in the manufacturing sector accounted for 63.1% of total employment in the goods producing sector, a decline of approximately 3% or 40,566 jobs from 1987 employment levels.

In 1999, the breakdown of employment between the goods-producing sector and the services-producing sector was unchanged from 1992 percentages. The recorded levels of employment in the manufacturing sector have increased in each year since 1993. By 1999, those employed in the manufacturing sector accounted for 67.6% of all goods-producing jobs.

In 1999 the increase in foreign demand for Canadian made products has spurred employment in the computer and electronic parts sector, which in part have positively effected employment in the manufacturing sector. In 1999, the manufacturing sector in Ontario reported gains in employment of an additional 59,700 jobs. In addition to high-tech manufacturing, the automotive sector has experienced an increased labour market in part due to a strong U.S. economy.

A comparison of 1999 versus 1987 labour market numbers for the Province of Ontario reveals that the size of the labour market in the goods-producing sector has declined by 0.1%, at the same time the services-producing sector has experienced an increase of 24.3%. In 1993, employment in the manufacturing sector in Ontario was at its lowest level, just 79% of the reported 1987 level.

Over the period 1997 to 1999, in the Province of Ontario, the growth in permanent and temporary employment in the goods-producing sector was 11.5% and 9.8%, respectively. For purposes of comparison, over the same period, the growth in permanent and temporary employment in the services-producing sector was reported at 4.8% and 15.7%, respectively. In addition, in 1999 the average hourly wage rate for the manufacturing sector, the largest sector within the goods-producing sector, was \$17.79, while in the trade sector, the largest sector within the services-producing sector, the average hourly wage rate was \$12.99. Consequently, the shift from goods-producing employment to services-producing employment has resulted in more temporary positions, as well as a decline in the average hourly wage rate for those individuals forced out of the goods-producing sector and into the services-producing sector.

The unemployment rate may not be an appropriate stand alone indicator of the aggregate state of the economy or the economic prosperity of the population. It is not that the unemployment number is wrong; rather it may be asking too much of a single measure to measure economic prosperity, especially when dramatic demographic changes have occurred in the labour force. The discussion above has demonstrated that the unemployment rate may underestimate the degree of hardship and loss in the population. The possibility of reduced hardship during periods of low unemployment may be unsupported, as the unemployed may be looking for temporary jobs. For these reasons additional indicators such as poverty rate, demand on social services, income inequality, high school dropouts, low-weight births, and so on, may be better indicators in measuring the economic prosperity of the Great Lakes region.

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## Water Use

SOLEC Indicator #7056

### Purpose

This indicator directly measures the amount of water used by residents of the Great Lakes basin and indirectly measures the stress to the Great Lakes ecosystem caused by the extraction of this water and the generation of wastewater pollution.

### Ecosystem Objective

High rates of water use are associated with a number of environmental problems. For example, groundwater depletion can result from high water use in combination with high rates of population growth. Also, there is a strong correlation between water use and the quality of wastewater released from sanitary sewage treatment plants. This indicator supports Annex 8 of the Great Lakes Water Quality Agreement.

### State of the Ecosystem

Generally, there are not great differences among the Great Lakes Basin communities' in terms of water use, although the Regional Municipality of Niagara, Ontario appears to be using more per capita than the other municipalities sampled. Figure 1 below illustrates the sample results of water usage rates from four municipalities in the basin. The larger urban communities of Toronto, Ontario and Cuyahoga (including Cleveland), Ohio exhibited similar water use patterns per capita. The largely rural community of Niagara County, New York had the lowest per capita water usage rates of the sample, although a bias

was possible since there were a small number of residents that were using ground water, thus deflating the water use numbers.

The Regional Municipality of Niagara had significantly higher water use rates than the other municipalities, almost 50 cubic meters per capita more. Initial research results indicates that there also appear to be differences between Canadian and US communities. Additional research is needed to better appreciate the differences among these communities in their rates of water use. The sample of the four Great Lakes communities did not indicate any apparent linkages between urban density, for example, and water use rates.

### Future Pressures on the Ecosystem

While water is essential to life, water use is a stressor to the ecosystem. Minimizing the amount of water that humans use, at rates more consistent with those in other places, such as European cities, for example would reduce stress on the ecosystem. Further, there is a positive relationship between the amount of water used and the quantity and quality of wastewater discharged.

As Great Lakes populations grow, there will be increasing demand for water for all purposes. In addition, there is expected to be a decline in the availability of water and lower water levels for the Great Lakes as a result of longer term global climate change.

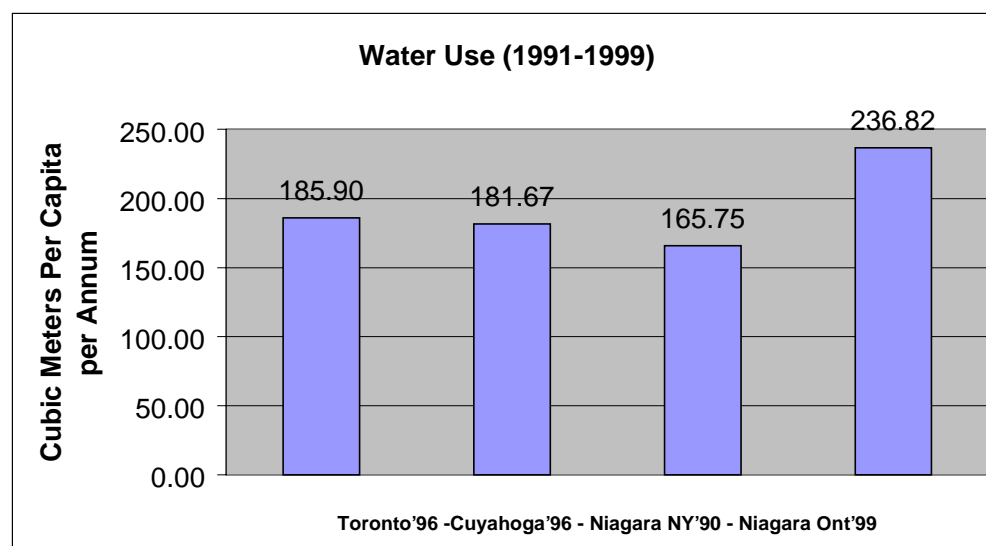


Figure 1. Water Use Rates of Four Sampled Communities in the Great Lakes Basin

### Future Action

Water conservation programs implemented throughout the Great Lakes basin would help to alleviate the stresses caused by excessive and unnecessary water use by residents in the basin. There is significant potential for reduction in water use given the technology. Perhaps the most significant shortcoming in water policy throughout the Great Lakes basin is in the area of economic incentives for water conservation. There is significant potential for developing water pricing strategies that ensure

equitable access to water while rationalizing use.

#### Further Work Necessary

Additional research would be beneficial in a number of areas. First of all, there is a need to better understand the relationship between water use and urban form. Although the sample information was not sufficient to draw any conclusions about any relationship that might exist it should be expected that there is a relationship between population density and water use. The existence of any such relationship could be explored through a broad survey other communities in the Great Lakes basin and an exploration of water use in these communities over various time periods.

Second, as with other developing land use indicators, there is also a need to set standards for collecting and reporting on water use data. Third, governments at all levels should join public interest groups and academic institutions in this research to broaden its appeal and understanding. Fourth, there are opportunities inherent in researching water use to better understand the relationship between water use and wastewater generation, between the demand for water and its pricing, and between water use and technological innovation.

Finally, the initial survey results of communities in the Great Lakes basin is apparently inconclusive with respect to size of community or urban density and rate of water use. The role of this indicator in land use decisions needs to be explored. It is possible that it might best serve as a basin-wide, rather than a community indicator of land use and human/societal activity.

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